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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,535	08/20/2008	Toshiharu Takayama	8957-000007/US/NP	9968
27572 7590 04/06/2012 HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			EXAMINER GOODWIN, DAVID J	
			ART UNIT 2818	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/593,535	Applicant(s) TAKAYAMA ET AL.	
	Examiner DAVID GOODWIN	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 May 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-3,6-9,14-18,20,21,24,25,28 and 29 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-3,6-9,14-18,20,21,24,25,28 and 29 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 6, 7, 8, 9, 15, 16, 17, 18, 20, 21, 24, 25, 28, and 29 rejected under 35 U.S.C. 103(a) as being unpatentable over Ernsberger (US 6856516) in view of Potter (US 6444563).

3. Regarding claim 1.

4. Ernsberger teaches an electronic component. Said component comprises a plurality of circuit elements (80) on one surface of a substrate (90), said components being resistors. A plurality of electrode pairs (270) on one surface of the substrate (90) the electrode pairs being respectively connected to the circuit elements (80). A plurality of conductive balls respectively fixedly bonded to the electrodes. The plurality of electrodes having first and second areas, the second areas being larger than the first areas (fig 8). The plurality of conductive balls are substantially equal in size. The circuit elements connected to the electrode pairs with the second lands are also connected to electrodes (274) with lands (294) other than the first lands, and positions of the circuit elements are offset in a plan view such that the circuit elements are laterally displaced from a shortest path between a center of each electrode of the electrode pairs with the second lands (fig 8) (column 8 lines 30-65).

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5. In this embodiment Ernsberger does not teach a overcoat
6. In another embodiment Ernsberger teaches forming an overcoat (98) over the electrodes and circuit elements and partially exposing the electrodes to provide lands (70), and conductive balls (85) fixedly connected to the lands. And that the conductive balls (85) are fixedly bonded to the landing pad (70) by fixedly bonding member (88) (fig 6)
7. It would have been obvious to one of ordinary skill in the art to provide an overcoat in order to prevent shorts between leads
8. Ernsberger does not teach that the landing pads through the overcoat are of different sizes.
9. Potter teaches landing pads (22) with solder balls fixedly attached thereto. Said landing pads are of first and second sizes (fig 6) (column 4 lines 20-50).
10. It would have been obvious to one of ordinary skill in the art to provide larger landing pads in order to extend the fatigue life of the joints.
11. Regarding claim 2.
12. Potter teaches that the second larger lands are located at a position proximate to an external end of the substrate (20) (fig 5,6).
13. Regarding claim 6
14. Ernsberger teaches that in the direction of the longer side are corners.
15. Potter teaches that the second lands are larger in the corners than at the midpoints.
16. Regarding claim 7.

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17. Ernsberger teaches that the substrate (90) is a tetragonal substrate with lands located in each corner (fig 8)

18. Potter teaches that the substrate (20) is a tetragonal substrate and one of the second, larger lands is located in each corner of the tetragonal substrate (20) (fig 4,5).

19. Regarding claim 8.

20. Ernsberger teaches that the substrate (90) is a tetragonal substrate and one of the lands is located at a position proximate to each of both external ends of the tetragonal substrate (90) in a direction of a shorter side of the tetragonal substrate (fig 8).

21. Potter teaches that the substrate (20) is a tetragonal substrate and one of the lands (22) is located at a position proximate to each of both external ends of the tetragonal substrate (90) in a direction shorter of a side of the tetragonal substrate (fig 4).

22. Regarding claim 9

23. Ernsberger teaches that the landing pads (72) are tetragons (fig 1).

24. Potter teaches that the landing pads (22) are ellipses (fig 4).

25. Regarding claim 15.

26. Ernsberger teaches that in the direction of the longer side are corners.

27. Potter teaches that the second lands are larger in the corners than at the midpoints.

28. Regarding claim 16.

29. Ernsberger teaches that in the direction of the longer side are corners.

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30. Potter teaches that the second lands are larger in the corners than at the midpoints.

31. Regarding claim 17.

32. Ernsberger teaches that the substrate (90) is a tetragonal substrate with lands located in each corner (fig 8)

33. Potter teaches that the substrate (20) is a tetragonal substrate and one of the second, larger lands is located in each corner of the tetragonal substrate (20) (fig 4,5).

34. Regarding claim 18

35. Ernsberger teaches that the substrate (90) is a tetragonal substrate with lands located in each corner (fig 8)

36. Potter teaches that the substrate (20) is a tetragonal substrate and one of the second, larger lands is located in each corner of the tetragonal substrate (20) (fig 4,5).

37. Regarding claim 20

38. Ernsberger teaches that the substrate (90) is a tetragonal substrate and one of the lands is located at a position proximate to each of both external ends of the tetragonal substrate (90) in a direction of a shorter side of the tetragonal substrate (fig 8).

39. Potter teaches that the substrate (20) is a tetragonal substrate and one of the lands (22) is located at a position proximate to each of both external ends of the tetragonal substrate (90) in a direction shorter of a side of the tetragonal substrate (fig 4).

40. Regarding claim 21

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41. Ernsberger teaches that the substrate (90) is a tetragonal substrate and one of the lands is located at a position proximate to each of both external ends of the tetragonal substrate (90) in a direction of a shorter side of the tetragonal substrate (fig 8).

42. Potter teaches that the substrate (20) is a tetragonal substrate and one of the lands (22) is located at a position proximate to each of both external ends of the tetragonal substrate (90) in a direction shorter of a side of the tetragonal substrate (fig 4).

43. Regarding claim 24

44. Ernsberger teaches that the landing pads (72) are tetragons (fig 1).

45. Potter teaches that the landing pads (22) are ellipses (fig 4).

46. Regarding claim 25

47. Ernsberger teaches that the landing pads (72) are tetragons (fig 1).

48. Potter teaches that the landing pads (22) are ellipses (fig 4).

49. Regarding claim 28

50. Ernsberger teaches that the landing pads (72) are tetragons (fig 1).

51. Potter teaches that the landing pads (22) are ellipses (fig 4).

52. Regarding claim 29

53. Ernsberger teaches an electronic component. Said component comprises a plurality of circuit elements (80) on one surface of a substrate (90), said components being resistors. A plurality of electrode pairs (270) on one surface of the substrate (90) the electrode pairs being respectively connected to the circuit elements (80). A plurality

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of conductive balls respectively fixedly bonded to the electrodes by fixedly bonded members. The plurality of electrodes having first and second areas, the second areas being larger than the first areas (fig 8). The plurality of conductive balls are substantially equal in size. The circuit elements (80) interconnecting the electrode pairs (274) with the second lands are positioned offset in a plan view such that the circuit elements (90) are laterally displaced from a shortest path between a center of each electrode of the electrode pairs with the second lands (294) (fig 8) (column 8 lines 30-65).

54. In this embodiment Ernsberger does not teach a overcoat

55. In another embodiment Ernsberger teaches forming an overcoat (98) over the electrodes and circuit elements and partially exposing the electrodes to provide lands (70), and conductive balls (85) fixedly connected to the lands (fig 1)

56. It would have been obvious to one of ordinary skill in the art to provide an overcoat in order to prevent shorts between leads

57. Ernsberger does not teach that the landing pads through the overcoat are of different sizes.

58. Potter teaches landing pads (22) with solder balls fixedly attached thereto. Said landing pads are of first and second sizes (fig 6) (column 4 lines 20-50).

59. It would have been obvious to one of ordinary skill in the art to provide larger landing pads in order to extend the fatigue life of the joints.

60. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ernsberger (US 6856516) in view of Potter (US 6444563) as applied to claim 1 and further in view of Zeng (US 7070088)

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61. Regarding claim 3.

62. Ernsberger in view of Potter teaches elements of the claimed invention above.

63. Ernsberger further teaches the fixedly bonding member(88) at each land (70) has a size that is proportional to an area of each land so that the conductive balls are fixedly bonded to a surface of the land (fig 6).

64. Ernsberger in view of Potter does not teach that the surface is the entire surface of the land.

65. Zeng teaches that the entire surface of the land (706) is bonded to the fixedly bonding member (707) (fig 7) (column 5 lines 15-40).

66. It would have been obvious to one of ordinary skill in the art to bond to the entire surface in order to maximize area and minimize resistance.

67. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ernsberger (US 6856516) in view of Potter (US 6444563) as applied to claim 1 and further in view of Zeng (US 7070088)

68. Regarding claim 14.

69. Ernsberger in view of Potter teaches elements of the claimed invention above.

70. Ernsberger in view of Potter does not teach that the composition of the fixed bonding member is lead silver.

71. Zeng teaches that the entire surface of the land (706) is bonded to the fixedly bonding member (707) using lead-silver containing paste (fig 4)(column 3 lines 30-45).

72. It would have been obvious to one of ordinary skill in the art to bond to the entire surface in order to maximize area and minimize resistance.

Response to Arguments

73. Applicant's arguments with respect to claims have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID GOODWIN whose telephone number is (571)272-8451. The examiner can normally be reached on Monday through Friday, 9:00am through 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke can be reached on (571)272-1657. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Djg

/STEVEN LOKE/

Supervisory Patent Examiner, Art Unit 2818